

Listing of Claims

This listing of claims will replace all prior versions and listing of claims in Application.

Claim 1 (CURRENTLY AMENDED): An implant assembly for treating proximal femur fractures and same side fractures of shaft of a femur, ~~said femur containing a neck portion and a head portion, said shaft of said femur containing a medullary canal, a first plane passing through a long axis of said medullary canal and a mid section of said neck portion and said head portion, said implant assembly comprising~~ including:

A) a unitary intramedullary nail being adapted in use for insertion into ~~said~~ a medullary canal of said femur, said intramedullary nail comprising ~~having~~ a head, an intermediate portion defining a long axis of said intramedullary nail and a knee end portion,

B) a targeting device ~~having~~ comprising:

a connecting end ~~to connect with said thigh end of said intramedullary nail by a temporary connecting bolt,~~
~~a handle part~~ connectable to said intramedullary nail,
a block of a second plurality of proximal holes and
a block of a second plurality of distal holes ,

a) wherein said head of said intramedullary nail has a first plurality of proximal holes defining a proximal-axis centerline of each of said first plurality of proximal holes ~~being directed towards~~ extending through centre of corresponding each of said second plurality of proximal holes of said targeting device and extendable through a midsection of ~~said~~ a head portion and ~~said~~ a neck portion of said femur , ~~and making an angle of approximately 120 degrees with a long axis of said intramedullary nail, said proximal axis lying on said first plane,~~ said proximal centerline intersects with said long axis of said intramedullary nail defining a plane of centre of each of said first plurality of proximal holes,

b) wherein said intermediate portion of said intramedullary nail has a first plurality of distal holes ~~to hold a distal fragment of said femur, wherein a distal axis of each of said distal holes making an angle of approximately 90 degrees with said long axis of said intramedullary nail, said distal axis lying on a second plane, said second plane being defined by said distal axis and said long axis of said intramedullary nail; and~~ defining a distal centerline of each of said first plurality of distal holes extending through centre of corresponding each of said second plurality of distal holes of said targeting device and extendable through a midsection of said shaft of said femur, said distal centerline intersects with said long axis of said intramedullary nail substantially perpendicular defining a plane of centre of each of said first plurality of distal holes and

c) wherein said plane of centre of each of first plurality of proximal holes intersects with said plane of centre of each of first plurality of distal holes such that each of a plurality of proximal sliding hip pins is engagable in said midsection of said neck portion and said head portion through centre of each of said first plurality of proximal holes slidably and each of a plurality of distal locking screws is engagable in said midsection of said shaft through center of each of said first plurality of distal holes simultaneously without rotating said targeting device connected to said intramedullary nail.

~~wherein an axis of each of said second plurality of proximal holes is the same as a proximal axis of a corresponding one of said first plurality of proximal holes;~~

~~wherein an axis of each of said second plurality of distal holes is the same as a distal axis of a corresponding one of said first plurality of distal holes;~~

~~wherein said second plurality of proximal holes lies on said first plane and said second plurality of distal holes lie on said second plane;~~

~~whereby said second plurality of proximal holes and said second plurality of distal holes are in different planes.~~

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Claim 2 (CURRENTLY AMENDED): An implant assembly of claim 27, wherein a short length version of said intramedullary nail has an anterior curvature in said knee end portion capable to match an anterior curvature of said medullary canal of said femur to avoid abutting of a tip of said knee_end to an anterior cortex of middle part of said shaft of said femur and prevent stress concentration in said shaft.

Claim 3 (CURRENTLY AMENDED): An implant assembly of claim 2, wherein said connecting end of said targeting device is ~~characterized by having~~ has a matching diameter with an internally threaded part of said intramedullary nail,
~~wherein said targeting device is connected by said temporary connecting bolt with said intramedullary nail, and~~
~~wherein said connecting end of said targeting device is also~~ short and compact to reduce the size of incision for insertion of said intramedullary nail and does not obstruct intraoperative imaging even though it is not radiolucent.

Claim 4 - 6 (CANCELED)

Claim 7 (CURRENTLY AMENDED): An implant assembly of claim 2, wherein said neck portion of said femur contains inferiorly a dense calcar portion, and superiorly a superior surface,
wherein a first distance between a tip of said connecting end of said targeting device and said second plurality of proximal holes of said targeting device is kept at "X" value and a second distance in between a pair of said second plurality of proximal holes is kept at "Y" value,
wherein the values of "X" and "Y" in millimeters is kept in such a way that ~~placement of one of said plurality of proximal sliding hip pins happens near~~ is capable of engagement in said dense calcar portion for better fixation and another one of said plurality of proximal sliding hip pins ~~gets placed avoiding superior surface of~~ is capable of engagement in said neck portion substantially inferior to said superior surface of said neck portion and so capable of preventing "cut through" of

said another one of said plurality of proximal sliding hip pins from said neck portion and said head portion of said femur.

Claim 8 (CURRENTLY AMENDED): An implant assembly of claim 2, wherein said ~~intramedullary nail is of a~~ short length version of said unitary intramedullary nail is mounted on said targeting device ~~, said block of said second plurality of distal holes of targeting device to be used when said short length version of intramedullary nail is placed in medullary canal~~, a distance between ~~a~~ said tip of said connecting end of said targeting device and said second plurality of distal holes of said targeting device is being kept at "Z" value in millimeters in such a way that said second plurality of distal holes of said targeting device target corresponding with ~~said distal locking~~ first plurality of distal holes of said intramedullary nail ~~before anterior curvature of femur starts to get sure distal interlocking of said intramedullary nail with said femur~~

Claim 9 - 13 (CANCELED)

Claim 14 (Currently Amended): An implant assembly of claim 2, wherein said first plurality of proximal holes of intramedullary nail is characterized having a third distance between tip of a connecting end of said intramedullary nail and said first plurality of proximal holes is kept at "X1" value and a fourth distance in between a pair of said first plurality of proximal holes is kept at "Y1" value where the values of "X1" and "Y1" in millimeters are kept in such a way that ~~placement of~~ one of said plurality of proximal sliding hip pins ~~happens near~~ is capable of engagement in said dense a calcar portion of said femur for better fixation, and wherein another one of said plurality of proximal sliding hip pins is capable of engagement in said neck portion substantially inferior to said ~~gets placed avoiding a~~ superior surface of said neck portion and so capable of preventing "cut through" of said another one of said plurality of proximal sliding hip pins from said neck portion and said head portion of said femur.

Claim 15 (CURRENTLY AMENDED): An implant assembly of claim 2 , wherein ~~said first plurality of distal holes of a~~ said short length version of said intramedullary nail is mounted on said targeting device ~~characterized having , a~~ distance between tip of said connecting end of said short length version intramedullary nail and said first plurality of distal holes is kept at "Z1" value in millimeters in such a way that said second plurality of distal holes of said targeting device target corresponding to ~~said first plurality of distal locking holes. of said short length version intramedullary nail before anterior curvature of femur starts to get sure~~ distal interlocking of said nail with femur without any chance to miss the said distal holes in said nail.

Claim 16 -17(CANCELED)

Claim 18 (CURRENTLY AMENDED): An implant assembly of claim 2 , wherein said proximal sliding hip pin comprises comprising a head part , a smooth part for sliding within said first plurality of proximal holes of said intramedullary nail, a plurality of barrels , a plurality of central large holes of a buttress plate capable of allowing limited controlled collapse of fracture fragments leading to bone to bone contact and early healing ; and a triflanged part with scalloped three flat equal surfaces up to 15 mm to 50 mm of span with mores taper towards leading end capable of engaging firmly in bone tissue of said head portion and said neck portion of said femur.

Claim 19 -20 (CANCELED)

Claim 21 (CURRENTLY AMENDED): An implant assembly of claim 18 wherein said triflanged part is characterized having a plurality of holes of at least 2 mm diameter connecting a central cannulation of said proximal hip pin to allow injection of liquid cement or other augmentation material to augment the ~~hold~~ engagement of said triflanged part of said proximal hip pin in said head portion and said neck portion of said femur without hampering sliding of said smooth part within said first

plurality of proximal holes of said intramedullary nail

Claim 22 -23 (CANCELED)

Claim 24 (PREVIOUSLY PRESENTED): An implant assembly of claim 2, wherein each of said intramedullary nail and said plurality of proximal hip pins has central cannulation.

Claim 25 -26 (CANCELED)

Claim 27 (CURRENTLY AMENDED): The implant assembly of claim 1, said implant assembly further comprising:

a buttress plate ~~having~~ comprising a plurality of central large holes and a plurality of small holes , ~~and~~

a plurality of barrels ,

a plurality of proximal sliding hip pins comprising a head, a smooth sliding part and a triflanged part ,said smooth sliding part engages slidably in each to pass through a corresponding one of said plurality of proximal holes and one of said central holes, corresponding one of said plurality of central large holes, corresponding one of said first plurality of proximal holes and preferably through corresponding one of said plurality of barrels, said triflanged part is capable of engaging firmly in bone tissue of said head portion and said neck portion of said femur, whereby said buttress plate provides additional support and platform to a greater trochanter and a lateral cortex of said femur and said barrels provide continuous smooth uniform gliding surface for controlled backward sliding of said smooth part , thereby said implant assembly is capable of maintaining engagement of said triflanged part in said head portion and neck portion of said femur and simultaneously capable of sliding of said smooth sliding part within said first plurality of proximal holes and said plurality of barrels leading controlled collapse of fracture fragments and bone to bone contact.

Claim 28 (CURRENTLY AMENDED): An implant assembly for treating proximal femur fractures and same side fractures of shaft of a femur ,~~said shaft portion of said~~

~~femur containing a medullary canal, said femur containing a neck portion and a head portion, said implant assembly~~ comprising :

A) ~~an~~ unitary intramedullary nail connectable to a targeting device being adapted in use for insertion into ~~said~~ a medullary canal, said intramedullary nail having a head, an intermediate portion defining a long axis of said intramedullary nail and a knee end portion,

a) wherein said head comprising a first plurality of proximal holes defining a proximal centerline of each of said first plurality of proximal holes extending through centre of corresponding each of a second plurality of proximal holes of said targeting device and extendable through a midsection of a head portion and a neck portion of said femur , said proximal centerline intersects with said long axis of said intramedullary nail defining a plane of centre of each of said first plurality of proximal holes,

b) wherein said intermediate portion of said intramedullary nail has a first plurality of distal holes defining a distal centerline of each of said first plurality of distal holes extending through centre of corresponding each of a second plurality of distal holes of said targeting device and extendable through a midsection of a shaft of said femur , said distal centerline intersects with said long axis of said intramedullary nail substantially perpendicular defining a plane of centre of each of said first plurality of distal holes,

c) wherein said plane of centre of each of first plurality of proximal holes intersects with said plane of centre of each of first plurality of distal holes such away that each of a plurality of proximal sliding hip pins is engagable in said midsection of said neck portion and said head portion through centre of each of said first plurality of proximal holes slidably and each of a plurality of distal locking screws is engagable in said midsection of said shaft through center of each of said first plurality of distal holes simultaneously without rotating said intramedullary nail connected therewith said targeting device,

B) ~~a buttress plate having~~ comprising a plurality of central large holes and plurality of small holes,

C) a plurality of barrels ,

D) a plurality of proximal sliding hip pins comprising a head, a smooth sliding part and a triflanged part , said smooth sliding part engages slidably in each to pass through a corresponding one of said plurality of proximal holes and one of said central holes. corresponding one of said plurality of central large holes, corresponding one of said first plurality of proximal holes and preferably through corresponding one of said plurality of barrels, said triflanged part is capable of engaging firmly in bone tissue of said head portion and said neck portion of said femur

Claim 29 -30 (CANCELED)

Claim 31 (NEW): A method of treating a fracture located between a head of a femur bone and a medullary canal of said femur utilizing a buttress plate preferably with a plurality of barrels in combination with a unitary intramedullary nail connectable to a targeting device, said method comprising the steps of:

- a) making a first minimal incision and a first aperture at tip of a greater trochanter connecting to a medullary canal of said femur bone;
- b) inserting from said first aperture said unitary intramedullary nail into said medullary canal, said intramedullary nail comprising:
 - a first plurality of proximal holes defining a first plane extending through centre of corresponding each of a second plurality of proximal holes of a targeting device and extendable through a midsection of a head and a neck of said femur,
 - a first plurality of distal holes defining a second plane extending through centre of corresponding each of a second plurality of distal holes of said targeting device and extendable through a midsection of a shaft of said femur , said first plane and said second plane intersects at a longitudinal axis of said intramedullary nail;
- c) making a second minimal incision and a plurality of drill holes in a lateral cortex of said femur targeting each of said first plurality of proximal holes and said midsection of said head and said neck guided by a plurality of sharp short guide pins to receive a plurality of proximal sliding hip pins ;
- d) sliding a narrow obtuse end of said buttress plate on surface of said greater

trochanter and said lateral cortex through said first minimal incision such that a plurality of central large holes of said buttress plate rests on said plurality of sharp short guide pins through a slit in said plurality of central large holes;

- e) positioning a plurality of barrels in said plurality of central large holes guided by said plurality of short sharp guide pins;
- f) inserting preferably by gentle hammering each of said sliding proximal hip pins through corresponding one of said central large holes and one of said first plurality of proximal holes such that said proximal hip pin is extendable across the fracture slidably and engagable firmly into the said neck portion and the said head portion of said femur and capable of impaction of said fracture.

Claim 32 (NEW): The method of claim 31 further comprising steps of:

inserting at least one of plurality of distal locking screws engagable to said lateral cortex and a medial cortex of said femur bone through one of plurality of small holes of said buttress plate and one of the said first plurality of distal holes of said intramedullary nail